UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/518,930 | 01/13/2005 | Tommi Koistinen | 042933/373913 | 7618 |

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| EXAMINER |
|---|
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| 2478 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 10/518,930 | KOISTINEN ET AL. |
| | Examiner | Art Unit | |
| | SHAQ TAHA | 2478 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on _10/29/2010_.

2a) ☐ This action is **FINAL**.    2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) _26 - 37 and 41 - 56_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _26 - 37 and 41 - 56_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All   b) ☐ Some *  c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

This is a non-final action for application number 10/518,930 in response to a

notice of appeal filed on 10/29/2010; the original application was filed on 01/13/2005.

Claims 26 – 37 and 41 - 56 are currently pending and have been considered below.

Claims 26, 41 and 50 - 54  are independent claims.

## *Response to Arguments*

Applicant's arguments with respect to claims 26 – 37 and 41 - 56 have been

considered but are moot in view of the new ground(s) of rejection.

## *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject matter
> sought to be patented and the prior art are such that the subject matter as a whole would have
> been obvious at the time the invention was made to a person having ordinary skill in the art to
> which said subject matter pertains.  Patentability shall not be negatived by the manner in which
> the invention was made.

Claims 26 – 28, 30, 37, 41, 42, 44 – 47, and 49 - 56 are rejected under 35

U.S.C. 103(a) as being unpatentable over Lu et al. (US 2002/0194345) in view of Lin et

al. (US 2002/0073211) and further in view of Morrison et al. (US 2003/0235194)


Regarding claims 26, 41, 50, 51, 52, 53, and 54

Lu et al. teaches a method, comprising: obtaining a current load state of each of

a plurality of processors configured to perform communication in a packet switched

connection, **[FIG. 10D illustrates a server state table. The server state table is a**

**dynamic part of the server table 186 shown schematically in FIG. 8. The server**

**state table stores server load metrics that include: Current Connections; Current**

**Load; Dynamic Server Weight and a count, wherein current load represents the**

**load of the plurality of the processors, (Lu et al., Paragraph 117)],**

selecting on a per received packet basis, by a load balancer configured to

distribute load to said processors, a processor having a lowest load, **[a web switch is**

**employed to switch an incoming client packet to one of many parallel web**

**servers in a data center. In conventional implementations, its primary task is to**

**perform a load-balancing function, i.e., to distribute an incoming packet to the**

**least busy server among the server farm, (Lu et al., Paragraph 12)],**

in such a manner that a respective next received  packet is distributed to the

processors irrespective of a specific connection to which this next received packet

belongs, **[Fig. 7, Ref # 220, 230, and 240, wherein the packet is distributed to the**

**server irrespective of a specific connection to which next received packet**

**belongs, (Lu et al., Paragraph 64)],**

and maintaining information about the load state of each processor so that said

selecting is performed by selecting one of said processors to serve and process a

respective received packet based on the load state, **[The load balancer 162 selects a**

**server that can best serve the request associated with the packet based on the**

**content class, server farm configuration and the current loads of the servers, (Lu
et al., Paragraph 58)],**

informing the current connection state to respective processors comprising

inserting data into a packet to be distributed, **[The application-related or Layer 7
message carried in a packet includes HTTP header and other HTTP payload such
as data or other personalized information, (Lu ET AL., Paragraph 63)],**

Lu et al. fails to explicitly teach obtaining a current connection state,

Lin et al. teaches a state server that is configured to monitor communication

sessions between users and application servers, **(Lin et al., Paragraph 35),** in order to

upon a failure of a web server an application server may attempt to reconnect the web

server and if the web server is shut down, a second web server is assigned to pick up

the session where it left off and facilitate further communication between the user and

the application server, **(Lin et al., Paragraph 35),**

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to modify Lu et al. by obtaining a current connection state, **(Lin et
al., Paragraph 35),** in order to upon a failure of a web server an application server may

attempt to reconnect the web server and if the web server is shut down, a second web

server is assigned to pick up the session where it left off and facilitate further

communication between the user and the application server, **(Lin et al., Paragraph 35),**

The modified Lu et al. fails to explicitly teach that connection state is inserted in a

packet,

Morrison et al. teaches that the control information may be affixed to or inserted into the packet data by logic circuits that are external to the network processor, **(Morrison et al., Paragraph 200)**, in order to handle different networking protocols and yet does not spend significant amount of processing time selecting the appropriate codes for execution, **(Morrison et al., Paragraph 6),**

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the modified Lu et al., by including that the connection state is inserted in a packet, **(Morrison et al., Paragraph 200)**, in order to handle different networking protocols and yet does not spend significant amount of processing time selecting the appropriate codes for execution, **(Morrison et al., Paragraph 6).**

Regarding claim 27, a method wherein said data storage is accessed by said load balancer, **[Load balancer accesses data stored on controller 120 as shown in Fig. 5].**

Regarding claim 28, a method wherein said data storage is accessed by said processors, **[Server farm which are the processors 30 accesses data stored on controller 120 as shown in Fig. 5].**

Regarding claim 30, a method wherein a processor is selected in a round-robin fashion, **[the first type is "Round Robin", which chooses a server among a group in turns, (Lu et al., Paragraph 119)].**

Regarding claim 31, a method wherein a supported service profile for each unit processor is maintained, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)].**

Regarding claim 32, a method wherein said supported service profile is used as additional selection criteria, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)].**

Regarding claim 33, a method wherein said load balancer is configured to obtain a load state from each processor upon a hardware based mechanism, **[the information to be sent out is increasing packaged for the specific hardware of the device, ending in Layer 1, which is the physical communication channel itself, (Lu et al., Paragraph 7)].**

Regarding claim 34, a method wherein said load balancer is configured to obtain a load state from each processor upon a packet based mechanism, **[When all servers are busy, the application switch will give preferential treatment to the High priority inbound packets, and delay and/or discard Medium and Low priority inbound packets, (Lu et al., Paragraph 127)].**

Regarding claims 35, 47, 55, an apparatus according to claim 54, further comprising means for inserting a communication connection state into a packet to be routed, **[The application-related or Layer 7 message carried in a packet includes HTTP header and other HTTP payload such as data or other personalized information, (Lu et al., Paragraph 63)],**

Regarding claim 36, a method wherein a packet returned by a processor is interpreted as a flag for a free resource, **[Setting an Access Control List ("ACL") by looking at TCP/IP headers, and returning a flag for reject or allowed packet traffic, (Lu et al., Paragraph 95)].**

Regarding claims 37,49, and 56, a method wherein excess traffic is redirected to another load balancer, said excess traffic being defined upon the number of active processors, **[a method is provided to perform content-aware switching without incurring delay and excessive processing while initially waiting for content to become available in order to make switching decisions, (Lu et al., Paragraph 167)].**

Regarding claims 42 and 46, an apparatus, wherein a load state of a processor is contained in a table, **[Fig. 10D].**

Regarding claim 44, an apparatus wherein a load state of a processor is expressed as value which corresponds to the percentage of load, **[it has been estimated that the packet classifier need only process five percent of all packet traffic, (Lu et al., Paragraph 78)].**

Regarding claim 45, an apparatus, wherein said selection circuitry is configured such that a processor is selected also on the basis of a parameter indicating the service profile supported by a respective processor, **[it is necessary for a web switch to determine the type of service requested in order to select a server from the appropriate group, (Lu et al., Paragraph 13)].**

Regarding claim 48, an apparatus according to claim 41, wherein the processors are comprised of multi core digital signal processing elements having a shared data storage for all cores, whereby said device comprises a first level of load balancing configured to select a digital signal processing means and a second level of load balancing configured to select a single core, **[a network processors, embodied by multiple programmable micro engines and a core processor, is used to implement and manage the various components, (Lu et al., Paragraph 148)].**

Claims 29 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lu et al. (US 2002/0194345) in view of Lin et al. (US 2002/0073211) in view of

Morrison et al. (US 2003/0235194) and further in view of Szabo et al. (US

2002/0138618)


Regarding claims 29 and 43, The modified Lu et al. teaches a that the load

balancer 162 selects a server that can best serve the request associated with the

packet based on the content class, server farm configuration and the current loads of

the servers, **(Lu et al., Paragraph 58),**

The modified Lu et al. fails to teach a method wherein said information about the

load state is maintained as a Boolean state,

Szabo et al. teaches Boolean variables that are packed into the flags field as

shown in Fig. 15, **(Szabo et al., Paragraph 102),** in order to switch and otherwise

respond to incoming requests by directing them to one of the servers, **(Szabo et al.,**

**Paragraph 8),**

It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to modify the modified Lu et al. by including that said information

about the load state is maintained as a Boolean state, **(Szabo et al., Paragraph 102),**

in order to switch and otherwise respond to incoming requests by directing them to one

of the servers, **(Szabo et al., Paragraph 8).**

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Shaq Taha** whose telephone number is 571-270-1921. The examiner can normally be reached on 8:30am-5pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Jeff Pwu** can be reached on 571-272-6798.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/S. T./

Examiner, Art Unit 2478

/Kenny S Lin/

Primary Examiner, Art Unit 2478